

## Review of Current Developments

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### The European Commission for the Standardization of the Tests on Explosives

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Since 1960 a group of experts, gathered on a voluntary basis, has been working under the name of “The European Commission for the Standardization of the Tests on Explosives” (Europäische Kommission zur Vereinheitlichung der Sprengstoffprüfungen; Commission Européenne de Normalisation des Essais d’Explosifs).

The following is a short description of this activity, from its origin, up to the present and for the future.

#### Origin of the Commission and its activity up to the present time

At the 31st International Congress of Industrial Chemistry in September 1958 in Liège, addressing the Section “Powder and Explosives”, Dr. Deffet, Director of the Centre de Recherches Scientifiques et Techniques pour l’Industrie des Produits Explosifs (C.R.I.P.E.), Brussels, (later Sterrebeek, Brabant), presented a paper on “La Normalisation des Essais d’Explosifs” (The Standardization of the Tests on Explosives). In this paper, Dr. Deffet proposed a standardization of the testing methods used for the determination of the properties of explosives in practical use. He suggested as subjects the tests to determine the following properties: transmission of detonation, energy, brisance, and velocity of detonation. Dr. Deffet’s proposal was received with approval and he therefore summoned a “European Commission for the Standardization of the Tests on Explosives”. The Commission started by preparing a survey of tests currently used by testing institutes and industrial laboratories in Europe. (Special procedures for scientific investigations connected with basic research were not included.) A detailed discussion about the advantages and disadvantages followed and, finally, for each of the tests one method was chosen for recommendation. The major part of this programme was fulfilled during the course of the first three meetings, in the years 1960, 1961 and 1962, at Sterrebeek, near Brussels.

The members of the Commission were recruited from the participants in the aforementioned Section of the Liège Chemistry Congress in 1958. This was a group of experts who were acquainted by personal experience with the testing methods under consideration and who were able to assess the possibilities of their optimization, taking into account the results of parallel

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or modified procedures. Directors of interested institutes, although not taking an active part personally in the work of the Commission, have given help and encouragement and they have been kept continuously informed. It is obvious that such a group, created on a voluntary basis, could not include all experts in the field, but a considerable number of well-known testing institutes and industrial laboratories from both eastern and western Europe have taken part. Up to thirteen European countries have been represented at the meetings and on occasions guests from the Commission of the European Economic Community and the Official Testing Station of the U.S. Bureau of Mines in Pittsburgh, Pennsylvania, have also been present. All the decisions of the Commission have been arrived at unanimously after detailed discussions.

The subsequent meetings of the Commission took place in the years 1970, 1971 and 1972 at the Berggewerkschaftliche Versuchsstrecke Dortmund—Derne. These meetings were comprehensively reported in the periodical *Explosivstoffe*\* and, in shortened form, in the Belgian journal *Explosifs*. The composition of the Commission and the definition of its subject matter followed the tradition of the years 1960—1962. However, beyond the adopted goal of a standardization of testing methods already in use, a general wish was expressed that, in addition, new testing methods should be considered for discussion. It was felt that the knowledge available within the group would ensure a comprehensive survey and that the early consideration of new methods would help to prevent unnecessary diversification in new developments. The work originating from these meetings of the Commission, or inspired by them, has been published in 42 articles in *Explosivstoffe* from 1971 to 1973. The publications relating to the meetings in the early 1960's are to be found mainly in the Belgian journal *Explosifs*. Reference to results and objectives of the Commission has been made in other publications and in technical manuals. A major part of the recommendations of the Commission has been incorporated, in a slightly modified form, under the heading "Verfahren zur Festlegung sprengtechnischer Kennzahlen von Sprengstoffen" (Methods for the determination of blasting data for explosives) in Appendix I of the Notification of Testing Instructions for Explosives, Igniting Devices and Blasting Accessories of August 21, 1974, in connection with the law passed by the German Federal Republic concerning Explosive Substances (Explosives Law) on August 25, 1969.

### The Recommendations of the Commission

The recommendations for the selection and development of tests on explosives worked out by the Commission are listed below. The discussions that have led to these recommendations have already been comprehensively reported and commented on in the reports of the meetings already men-

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\*Erwin Barth Verlag K.G., Mannheim, later Neustadt an der Weinstrasse, Nos. 5/6 (1971), 5/6 (1972) and 3 (1973).

tioned. A report on the work completed up to 1970 can be found in *Explosivstoffe*\* as well as in *Explosifs* \*

Recommendations relating to the following tests have been drawn up by the Commission:

1. Determination of the energy of detonation gases (strength)
  - 1.1 Ballistic mortar
  - 1.2 Lead block test
2. Determination of brisance
  - 2.1 Modified Kast method
3. Determination of the velocity of detonation
  - 3.1 Dautriche and other methods
4. Determination of the transmission of detonation (gap test)
  - 4.1 Method of the transmission coefficient of detonation  
(Méthode du Coefficient de transmission de la détonation: CTD)
5. Projectile impact test, impulse method

In addition, the Commission has adopted two standardized test detonators, of different initiating strengths, and specified their main characteristics.

### The future work of the Commission

In the meantime, the responsibility for the Commission has been entrusted to the Swedish Detonic Research Foundation in Stockholm and its Director, Dr. P.A. Persson. At a meeting that took place in May 1975 at Verneuil, near Paris, by the courtesy of the Centre d'Etudes et Recherches des Charbonnages de France (CERCHAR), and at which a representative selection of 15 members of the Commission from seven countries of eastern and western Europe participated, the future work of the work of the Commission was discussed.

The important items of the discussion at Verneuil were:

- The consideration of a change of name for the Commission with the object of preserving the essential nature of the name inherited from the 1960's but removing its resemblance to the many working groups of the Commission of the European Communities.
- Association with an appropriate established international organization for standardization.

Recommendations with regard to these items have been distributed to the members and sponsors of the Commission with Circular Letter No.2 (1975)

\*No. 5/6 (1971) Appendix 2, pp. 66–67.

\*\*No. 3 (1971), pp. 103–104.

and will be submitted to the Commission on the occasion of its seventh full meeting to take place in Stockholm from June 8 to 11, 1976.

Further subjects to be discussed are:

1. Toxic fumes from explosives during blasting (primarily the investigation of fumes produced in model scale and laboratory tests, and the relevance of the results to practical conditions).
2. Testing of slurries (water gels) and other explosives of low sensitiveness.
3. Standardization of test detonators, and associated questions.
4. Testing methods for deflagration of explosives.
5. Transmission of detonation in ion-exchange permitted explosives.